

**Before the
Federal Communications Commission
Washington, DC. 20554**

In the Matter of)
)
Inquiry Regarding Carrier) **ET Docket No. 03-104**
Current Systems, including)
Power Line Broadband Systems)
)

To: The Commission

**REPLY COMMENTS of Nickolaus E. Leggett
N3NL Amateur Radio Operator to the Comments Submitted by the North
American Shortwave Association (NASWA)**

The following is a set of reply comments from Nickolaus E. Leggett, an amateur radio operator (Extra Class licensee – call sign N3NL), inventor (U.S. Patents # 3,280,929 and 3,280,930 and one electronics invention patent application pending), and a certified electronics technician (ISCET and NARTE). I also have a Master of Arts degree in Political Science from the Johns Hopkins University (May 1970).

These comments are reply comments to the comments submitted by the North American Shortwave Association (NASWA).

Restricting BPL Emissions to 30 to 47 MHz

NASWA has made a notable contribution to this docket by suggesting that the BPL emissions be limited to the frequency range of 30 to 47 MHz. NASWA identifies these frequencies as being less valuable than the lower short-wave frequencies that would be impacted by the conventional proposals for BPL. Restricting BPL to the range of 30 to 47 MHz is an excellent suggestion that should be examined in detail by the Commission and the other parties to this docket.

This suggestion would prevent BPL from negatively impacting important services such as amateur radio and short-wave broadcasting. It would also protect some, but not all, of decameter radio astronomy.

Problems with the Notches in the BPL Emissions Spectrum

In supporting their suggestion for restricting BPL to 30 to 47 MHz, NASWA makes the observation that the proposed “notches”, or quiet bands, without BPL operation would severely restrict the Commission’s ability to reallocate radio frequencies in the future. In addition, these notches would limit the Commission’s support for international changes in radio frequency allocations. The basic problem here is once the BPL systems are built and operating, political pressures from the numerous users and the utility companies will effectively block any change to the BPL allocations. The Commission will be locked in to the existing structure of the notches and quiet bands for decades to come.

NASWA makes the alternative suggestion that the “less valuable” 30 to 47 MHz spectrum can be designated as a “waste dump” for the disposal of BPL emissions. In this scenario, the Commission would continue to be free to manage the short-wave spectrum allocations below 30 MHz. This is an appealing concept that should be examined by the Commission and the parties to this Notice of Inquiry.

Problems with the 30 to 47 MHz BPL Emission Band

While the NASWA proposal is appealing, there are some disadvantages to it. For example, the National Academy of Sciences’ Committee on Radio Frequencies (CORF) in their comments has identified two radio astronomy service (RAS) frequency bands that would be within the NASWA BPL emission disposal band. These RAS allocations are:

37.50 – 38.0 MHz (secondary domestic allocation)

38.0 – 38.25 MHz (sole domestic primary allocation)

Certainly the radio astronomy community would be opposed to including these frequencies within a BPL emissions band. Other users of the 30 to 47 MHz would have similar objections to strong BPL emissions in their allocations.

Opportunity Costs of BPL Operations

The opportunity cost of BPL operation is very high. Short-wave radio frequencies that could have been used for other communications purposes will be blocked in many areas of the Nation. In the NASWA proposal, the lost frequencies (30 to 47 MHz) have the special value that they are naturally conducted over the horizon by the Earth's atmosphere like the other high frequencies. It seems a significant waste to use these frequencies for the mere disposal of emissions from the BPL technology that is not actually using the free-space propagation of these frequencies for radio communication.

In considering the opportunity cost of BPL operations, the Commission should consider the probable lifetime of the BPL technology. I suspect that the BPL technology will be used for several decades until it is eventually replaced by direct fiber optic service to the home. This direct fiber optic service will displace the other competing broadband technologies including BPL. During the decades of BPL operation a large slice of the high frequency radio spectrum (30 to 47 MHz) would be unavailable for other uses in many areas of the country.

Safety of Access BPL

The NASWA comments address the issue of the safety of Access BPL. This issue involves the bypass components that lead the BPL signals around the transformers used by the electric power grid. Failure of these bypass components could deliver thousands of volts to residential wiring causing injuries, fatalities, and fires. The Commission needs to study this safety issue in detail. A separate Notice of Inquiry (NOI) on BPL safety issues would be valuable.

Spectrum Environmental Ethics and BPL

Throughout its history, the Commission has required increasingly “clean” signals by the various services using radio transmitters. The technical standards for the purity of emissions have become increasingly strict over the years. This was a rational step to accommodate increasing numbers of radio transmitters and radio services.

Now the standard has changed and the Commission is embracing a noisy technology, BPL. This change and the earlier docket on Ultra-wideband communications indicate that the purity of emissions is no longer the dominant value for the Commission. In effect, spectrum-polluting technologies are being advocated based on the theory that an increasing noise floor is a harmless phenomenon.

This is as if the other Federal regulatory agencies had decided that noisier cars and airplanes were acceptable or that increased emissions of chemical pollutants are acceptable.

Unfortunately the increasing noise floor is a harmful phenomenon for weak-signal short-wave radio such as radio astronomy, amateur radio, Military Affiliate Radio System (MARS) traffic handling, and listening to short-wave broadcasts with an indoor antenna.

These users of the short wave radio spectrum are not as politically powerful as the electric utility companies, however they do provide useful services to America and the World.

Suggested Actions

The Commission should require that any Access BPL and In-Home BPL system not emit any additional radio noise in the short wave spectrum beyond that which is currently allowed. In the case of Access BPL this could probably be accomplished by burying the electric power lines within shielded conduit. Burying the electric power lines would also support other public interest values of safety, reliability, and aesthetics.

If the Commission finds that it must proceed with the higher-emission BPL technology due to the intense political pressure of the electric power companies, the Commission should follow the suggestions of the North American Shortwave Association and limit BPL emissions to the frequency range of 30 to 47 MHz.

Sacrificing this frequency range will enable the rest of short wave to continue to be useful as it is today.

The Commission should avoid sacrificing the interests of the small users of the short wave spectrum (short-wave listeners, amateur radio operators, Military Affiliate Radio System radio operators, and radio astronomers). These users are valid and important users of the radio spectrum.

Background Requirements for FCC Commissioners

The issues before the Federal Communications Commission are becoming increasingly technical and complex. It would be helpful if some of the Commissioners themselves had a technical background. The Commission should request Congressional

legislation requiring that at least one of the five commissioners have a communications technology credential of some sort. This credential could be an engineering degree, a scientific degree such as physics, a privately issued certification, a patent issued to the commissioner, or an appropriate FCC operator's license.

Respectfully Submitted,

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Statement of Service

A copy of this reply comment has been sent to the North American Shortwave Association (NASWA) by USPS First Class Mail.

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